

## NOTES ON IOWA SAPROPHYTES—I

### GEASTER MINIMUS SCHW. AND ITS RELATIVES

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(WITH PLATE 62, CONTAINING 3 FIGURES)

*Geaster minimus* Schw. is a beautiful little species found at times in considerable numbers growing amid the grass in places where this by reason of lighter soil is not too dense. It has been reported from various parts of the world but so far, in North America, from the eastern, forested region of the continent only. The type would appear to have been taken in South Carolina, perhaps about 1821, where it was found later also by Ravenel. It occurs, as reported, in South America, in Ceylon, Australia, Borneo, but, curiously, not in Europe.

However, in 1842, Vittadini described from northern Italy a little geaster, *G. marginatus*, which according to Saccardo is related to the Schweinitzian type and "appears to differ in the form of endoperidium only and in the 'rima' around the peristome." This "rima" is, properly speaking, a fissure, slit, or other elongated opening. Morgan (Jour. Cin. Soc., 1899) translates *rima* "chink" and says it appears sometimes in specimens recognized by him as *G. minimus* Schw. A chink in the sense of an opening or a fissure would seem here a morphological impossibility. Such a chink would cut out the peristomic areole.

Schweinitz describes *Geaster minimus* (Syn. Fung. Carol., No. 327): Peridium ovate, at the base plane, white, subpedicellate: the mouth plano-conic, ciliate; the volva (the outer peridium) multifid, fuscous, white below. Everywhere, on the bare ground in grassy places. Peridium of the size of a large pea, pedicellate. The mouth plano-conic from adhering cilia which are at length revolute and free at the apex. The several lobes (of the outer peridium) elegantly revolute, from the entire arched base; where they touch the ground, fuscous, white below, occu-

pying the space of  $\frac{1}{2}$  inch when expanded. Schweinitz evidently knew naught of chink or "*rima*."

De Toni in *Revue Mycologique*, 1887, p. 73, brings us, however, some help. De Toni, speaking of the Italian form, *G. marginatus* of Vittadini, says: "Cette espèce est donc une des plus petites du genre: elle diffère du *G. minimus* S. par la forme du peridium interne, et par la sillon autour du peristome." That is, "this species is one of the least of the genus: it differs from *G. minimus* by the form of the inner peridium and by the furrow around the peristome." Furrow or groove will do. The furrow, however, is owing to the elevation of a sort of marginal crest rather than to any marked depression around the areole.

Some years since, a tiny geaster was brought in, taken under a thicket of *Juniperus virginianus* L. The form closely resembles specimens of *G. minimus* Schw. but differs in several minor particulars. It is also like *G. marginatus* Vitt. but lacks the furrow.

It has seemed worth while to record this western form in order to make comparison of the three. It may be characterized as follows:

**Geaster juniperinus** sp. nov.

Outer peridium multifid, variable, 5-9-lobed; inner peridium ovate, elongate, pedicellate, white or bluish-white; stoma conic, ciliate, rising from a definite but only slightly depressed areole; columella stout; capillitial threads smooth, pallid by transmitted light, in diameter about  $3\mu$ ; spores globose, warted, dark-brown, almost black in mass, about  $3\mu$ .

On the ground beneath juniper trees, Iowa. The figures on the accompanying plate, by Jessie Parish, show the slight differences separating the kindred forms.

The Schweinitzian species in all cases observed are more nearly spherical, with paler and more coarsely warted spores. Vittadini's, *i. e.*, the European type, is intermediate, has different spores, more elongate inner peridium, and depressed areole. The Iowa form differs in color, in spore-color and markings, approaching *G. minimus* in areole, and *G. marginatus* in other points of structure. The columella in *G. minimus* is almost nil; in *G. juniperinus* well developed, strong, and persistent.

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## EXPLANATION OF PLATE LXII

Fig. 1. *Geaster juniperinus* Macbride. Sporophore,  $\times 1$ . Sporophore, showing section of inner peridium,  $\times 1$ . Capillitium, threads and spores,  $\times 1,130$ . A single spore,  $\times 930$ .

Fig. 2. *Geaster marginatus* Vittadini. Sporophore,  $\times 1$ . Sporophore, showing cross section of inner peridium,  $\times 1$ . Capillitium, thread and spore,  $\times 1,000$ .

Fig. 3. *Geaster minimus* Schweinitz. Sporophore,  $\times 1$ . Sporophore, showing cross section of inner peridium,  $\times 1$ . Capillitium, threads and spore,  $\times 1,000$ .